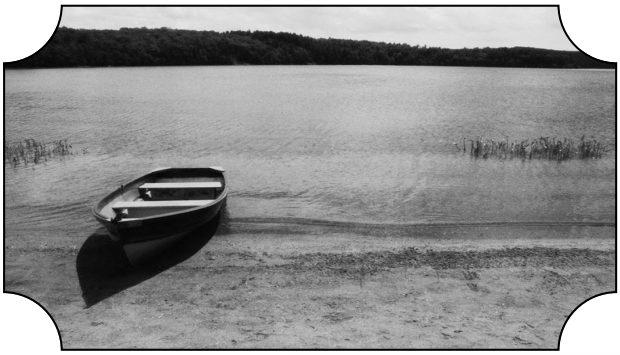

Cattail Chronicles

Issues Affecting the Surface Waters of Lake County

Volume 24, Issue 1 Spring 2017

Special points of interest:

- **Fun ways to engage your community and educate on AIS.**
- **Microbeads—what are they?**
- **Updated report on Water Hyacinth from the Illinois Natural History Survey.**

Inside this issue:

Gages Lake Carp Derby

By: Rob Flood (Gages Lake Conservation Committee) & Alana Bartolai (LCHD)

Most people are aware that carp are not a desirable species in lakes. Carp re-suspend bottom sediments and phosphorus, decrease water clarity, make it difficult for aquatic plants to grow and outcompete native fish for habitat and food. Gages Lake Conservation Committee (GLCC) has created a fun solution to remove carp from their lake while educating the lake community on this unwanted invasive species.

Every year, GLCC hosts a Carp Derby which began back in 2003. The GLCC started the derby as a public relations event and to bring awareness about invasive species. While most people are aware that common carp are not lake friendly, they are not sure why. GLCC makes sure to educate all participants in the Carp Derby on the negative impacts that carp and other unwanted aquatic invasive species have on lakes. In addition to education on invasive species, information is provided on what the average lake user can do to help eliminate the spread of these undesirable species, such as rinse, dry, and drain your boat.

Rob Flood from Gages Lake Conservation Committee weighing removed carp from the 2015 Carp Derby

The Carp Derby has been very successful for Gages Lake. Participation is weather dependent

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For information contact:

Lake County Health Department
Ecological Services
847- 377- 8020
http://health.lakecountyil.gov/Population/

LakeCounty
Health Department and
Community Health Center

Gages Lake Carp Derby (Continued)

but the average participation is around 75 participants with certain years drawing in over 100 people to catch carp in the name of improving water quality. The event is typically held in the spring (May or early June) when the carp are spawning in shallow water which can make them easier to catch. On average, 50 carp are removed from the lake as part of the derby and every participant who catches and removes a carp is awarded a prize.

GLCC recommends partnering with other organizations in your community to host the event as it helps bring awareness to the issue and the event. The GLCC leads the Gages Lake Carp Derby but partners with the Wildwood Park District and the Gagewood Lions Club. The Wildwood Park District owns the park where the derby is held, which allows for easy access for the Carp Derby participants.

The Gagewood Lions Club has donated several handicap fishing piers at the park and offers assistance and encourages handicap individuals to participate in the event. The Gages Lake Carp Derby only has a small budget for the event to purchase prizes, tackle and fishing bait. Volunteers help organize and staff the event. Since the event is low cost, fun, and educational it is a great event that can be easily replicated at other lakes in Lake County with an overabundance of carp.

Offering free bait is an incentive that could help draw crowds to such an event in your community. You could also find local fisherman to offer instruction on fishing techniques and help to tie hooks on for those who are new to fishing. The most difficult thing can be finding a place to dispose of the carp. Gardening clubs could potentially use the carp as fertilizer.

Participants lined up at the Gages Lake Carp Derby

Some of the carp removed from Gages Lake during the Carp Derby

"Once you start having a derby, you will get a loyal following of fishermen who really look forward to fishing every year." - Rob Flood, GLCC

Microbeads: Down the Drain and Into our Food Web

Reprinted from Lake Tides Volume 39, No 4.

Research and analysis published over the past year have revealed a new threat to lake health coming from an unlikely source: face wash. The companies that make face wash have been increasingly using tiny plastic "microbeads" to improve the scrubbing capabilities of their products. The microbeads, often under one millimeter in diameter, slip through most municipal wastewater treatment systems. Their ability to stay suspended in liquids is both part of what makes plastic microbeads popular with manufacturers (prevents the exfoliant from settling to the bottom of a container) and part of what makes them so problematic (once floating in open water, they resemble insect eggs and other food sources to fish). The accumulation of microbeads in lakes and rivers is beginning to alarm scientists who are just starting to understand the ecological implications.

Microbeads are often under one millimeter in diameter

For many years, ocean researchers have pointed to the ocean gyres - the most famous being the "great Pacific garbage patch" - as evidence that human waste products are wreaking havoc on a global scale. The currents of the oceans have steadily steered floating debris into relatively small, concentrated areas. Floating on or just below the surface, plastic bags and all sorts of various floating pieces gradually break down into smaller and smaller pieces. Fish and birds perceive the bits of floating plastic as food. The debris can quickly cause health problems, as is found too often on the remote Midway Islands where nesting albatrosses feed their young a diet of plastic garbage until their chicks die on the nest. A more complex problem arises from the toxins that tend to concentrate on the floating plastic: PCBs and other endocrine disruptors that then bioaccumulate in the food web and impact species that are not directly feeding on plastic debris.

In the realm of inland lakes, we have taken a number of steps to minimize the amount of large floating plastic debris. Wastewater systems and stormwater sewers generally intercept a great deal of litter before it hits the water, and it is now socially unacceptable in most places to simply throw garbage into a lake. The microbeads in our cleaning products threaten to introduce the bioaccumulation problem into more midwestern food webs, potentially even impacting people who catch and eat fish from lakes.

Lorena Rios-Mendoza is an assistant professor of chemistry at the University of Wisconsin - Superior. She began her research on pollutants associated with plastic debris found near Baja, California in the 1990s. In 2012, Lorena participated in a research project to see how common floating plastic debris was in the Great Lakes. While large plastic debris was uncommon, the research showed surprising amounts of microbeads.

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Microbeads: Down the Drain and Into our Food Web (Continued)

Reprinted from Lake Tides Volume 39, No 4.

The concentration generally increased along a downstream gradient in the Great Lakes system, with the highest amounts - over half a million pieces per square kilometer - found in Lake Erie. Another plastic pollution survey conducted by Dr. Sherri Mason and her team during the summers of 2012 and 2013, revealed over twice that amount in Lake Ontario (1.1 million per square kilometer). Mason, a chemistry professor at the State University of New York, Fredonia, found that approximately 70% of the plastic they skimmed off the top of the Great Lakes was between one-third and one millimeter in diameter!

More recently, scientists from McGill University in Canada reported measurable concentrations of plastic microbeads in the river sediment of the St. Lawrence River. Their findings, published in the *Canadian Journal of Fisheries and Aquatic Sciences* this past September, indicate that plastic concentrations in river sediment are similar to the most contaminated ocean sediment samples. No research has been done yet to look at how microbeads are impacting smaller inland lakes and rivers. Where municipal systems discharge treated wastewater into rivers or lakes, it is highly likely that microbeads are being discharged as well. We also know very little about how microbeads move and affect private on-site wastewater systems (septics). Since some septic waste is pumped and then treated at municipal plants, they too could be delivering plastic debris to the environment.

Manufacturers are already responding, with industry giant Unilever stopping the use of microbeads in their products in 2014. While the growing amount of microscopic plastic debris is troubling, society is already figuring out ways to turn off this pollution spigot. The most simple remedy is to stop buying and using products that contain microbeads. This includes not only soaps and toothpaste, but certain makeup products as well. This past summer, the State of Illinois passed a law that gradually bans the sale of products with microbeads, eliminating them from store shelves by 2019.

Aquatic Vegetation Restoration

By: Gerard Urbanozo (LCHD)

St. Mary's Lake is a privately owned 105-acre impoundment lake located in central Lake County. There were no aquatic plants present when Lake County Health Department visited the lake in 2002, 2005, or 2015 possibly due to carp activity, morphometry of the lake, and the hard, rocky substrate of the lake bottom. The lake is a flow through system, with the water entering the lake from Loch Lomond Lake via Bull Creek and then exiting on the east side over a spillway that flows to Butler Lake eventually reaching the Des Plaines River. The water quality in St. Mary's Lake is poor with low water clarity, high total suspended solid (TSS) concentrations, and high total phosphorus (TP) concentrations.

Above: An example of one of the carp exclosure fences. The fence was built in shallow water (<3 feet) with a mix of silt/sand sediment and in a section sheltered from heavy wind and wave action. Vallisneria, American Pondweed, and White Water Lily were planted as they can tolerate more turbid areas.

The Lake County Health Department – Ecological Services (LCHD-ES) and St. Mary's of the Lake Seminary worked together on implementing a carp exclosure study on St. Mary's Lake in 2016. St. Mary's lake is an example of a lake that is in an algae-dominated state and lacks any rooted vegetation. Common carp, and even grass carp, are known to be present and abundant in the lake. Previous studies have shown that common carp can severely reduce submersed aquatic vegetation through direct uprooting or herbivory. They can also re-suspend bottom sediments, reducing water clarity and increasing total suspended solids, making it more difficult for aquatic plants to grow. St. Mary's lake is an example of a fertile shallow lake in the algae-dominated state. Carp are often cited as a deterrent in St. Mary's Lake to allowing plant growth, as well as increasing total suspended solids and total phosphorus concentrations in the lake. LCHD-ES would like to determine if the exclusion of carp would allow plant growth and improve water clarity.

There were three study locations in shallow (2 – 3 ft.) near-shore areas of St. Mary's Lake. At the first location, we installed one fenced plot (carp excluded) and one open plot (carp permitted). The first location consisted of two plots that were side by side in areas with uniform water depth and sediment texture. Vallisneria or wild celery was planted in the fenced and unfenced plots.

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Aquatic Vegetation Restoration

Gerard Urbanozo

Above: The two pictures represent the same carp exclosure. The first picture was taken in June and the bottom picture taken in September. Plants were able to grow and expand in the enclosures by keeping carp away. American Pondweed did particularly well in this exclosure, as seen above.

The second site was located near the shoreline and the third site was a small bay near the dam that was fenced off to exclude carp.

The first site had a maximum depth of 3 feet to ensure there was enough sunlight penetration. Vallisneria tubers were planted in a grid pattern both inside and outside of the exclosure. Vallisneria grew well at both locations but eventually the plants outside the exclosure began to disappear. The second site was selected to see if the aquatic plants could grow in the harder rocky substrate. White water Lilly and American Pondweed were planted since they adapt well in shallow water areas. The plants were transplanted from Butler Lake in June. The American Pondweed did particularly well as it nearly covered the inside of exclosure.

The third site , a small bay near the dam, is nearly 100 feet across. A variety of aquatic plants were transplanted from Butler and Charles Lake to see which ones would thrive. Coontail, Water Stargrass, Vallisneria, White Water Lilly and American Pondweed were some of the plants selected since they can tolerate turbid waters. These plants were uprooted from the source lake and inspected for invasive plants and animals before they were planted.

All plants in the three separate exclosures thrived during the summer of 2016 and we will revisit the sites this spring to check for regrowth. The IDNR removed 1,006 carp from St. Mary's Lake in 2016 and has plans to remove additional carp in 2017. The goal is evaluate the carp role in preventing plant growth and whether the survival of plants is increased in study plots where carp are not present.

Invasive Species Spotlight: Water Hyacinth

Reprinted from Illinois Natural History Survey Reports , March 2016
Jay Vonbank, Andy Casper, Heath Hagy, and Aaron Yetter

AIS SPOTLIGHT

Water hyacinth is an invasive, free-floating perennial aquatic plant from South America that has become prolific throughout the southern United States and many countries worldwide. Water hyacinth forms dense, free-floating or rooted aggregations of plants, typically called beds, and is capable of vegetative reproduction as well as producing up to 6,000 seeds per flower. Water hyacinth thrives in virtually all types of water bodies, including lakes, rivers, small and large ponds, and irrigation canals, and forms dense beds on the water surface restricting commercial and recreation traffic, outcompeting native aquatic plants, and affecting natural aquatic processes.

Cluster of water hyacinth

Flower of water hyacinth

Dense mat of water hyacinth

Images courtesy of Illinois Natural History Survey

Ornamental trade, aquarium trade, and transportation (e.g., vehicles, boats, live wells) are major causes of introductions of water hyacinth. The combination of water hyacinth's desirable aesthetics and potential functionality (e.g., nutrient uptake) appeal to ornamental and aquarium trades. However, these same characteristics also make water hyacinth a worldwide threat as an invader outside its native range.

Although Illinois has been previously considered outside of the inhabitable range of water hyacinth, the spread of water gardens and the availability of this plant at garden shops has led this showy aquatic plant to become a reoccurring invader in the Illinois River – Chicago Areas Waterway System (CAWS). Unfortunately, the current extent of distribution and potential for future infestations around the state are largely unknown. However, water hyacinth has been located several times since 2009 in the Dresden Reach of the Illinois River. The Dresden Reach is productively different from the rest of the Illinois River because it is home to an abundance of emergent and submersed aquatic plants that are absent from the rest of the river system.

In 2013 and 2014, Illinois Natural History Survey (INHS) staff used several methods of surveillance to document the current distribution and potential establishment pathways of water hyacinth within the upper Illinois River.

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Invasive Species Spotlight: Water Hyacinth (continued)

Staff surveyed the entire Illinois River and associated floodwater plains from Hennepin, IL, to Joliet, IL, by both airplane and boat to determine the distribution of water hyacinth beds, bed sizes, standing biomass of beds, and distribution and abundance of propagules in the seed bank and water column. INHS staff also collected nearly 100 invasive common carp, which commonly eat seeds while feeding and may spread seeds of water hyacinth.

Between 2013 and 2014, INHS staff discovered 15 individual water hyacinth beds in the Illinois River. Free-floating individual plants were discovered floating at least 27 miles downstream of the northernmost bed location. In addition, water hyacinth was discovered in at least four other water bodies, including Skokie Lagoons (Glencoe, IL), Lake Springfield (Springfield, IL), and a pond near Marion, IL. In 2013, INHS staff also discovered water lettuce, another favorite plant used in water gardens that is a free-floating invasive similar to water hyacinth.

Water hyacinth seeds were detected in seed banks, indicating that there is a strong potential for continued water hyacinth infestation through seedling growth. Whole water hyacinth seeds were present in the digestive tracts of carp, suggesting that not all seeds are lost during ingestion. Whole and fragmented seeds resembling those of water hyacinth were present in 27% of the digestive tracts of common carp regardless of proximity to water hyacinth beds.

In 2014, water hyacinth was released into the upper Illinois River system by a local resident. There are several ways in which citizens can help reduce the spread of this and other invasive aquatic plants. First and foremost, purchase a native alternative to non-native, invasive plants. We suggest that water gardeners consider white or yellow waterlily, broad-leaved arrowhead, pickerelweed, American lotus, and other native aquatic plants. Examples of Illinois native plants that can substitute water hyacinth or water lettuce can be found at http://extension.illinois.edu/watergarden/. Proper disposal of water hyacinth or water lettuce can help prevent continued or unintentional release into aquatic systems. Plants can simply be placed in a robust plastic garbage bag and thrown away, or removed from water gardens, placed in an area away from other waterbodies in direct sunlight until dry, and mowed or otherwise shredded. It is important to remember that water hyacinth seeds are very small and can be missed by the naked eye, so keeping all plant material away from other water sources is very important. If water hyacinth is discovered in a public water body, the Illinois Department of Natural Resources should be notified immediately.

Join the Volunteer Lake Monitoring Program

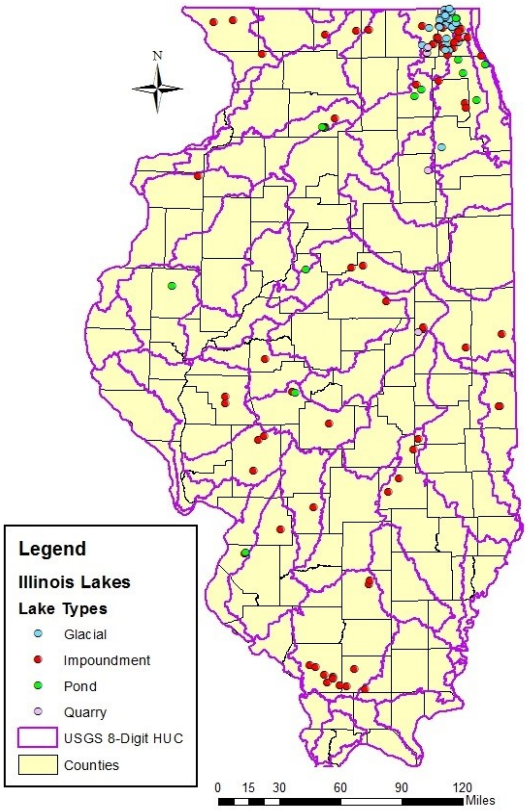
The Volunteer Lake Monitoring Program (VLMP) was established by the Illinois Environmental Protection Agency (IEPA) in 1981 to gather information on Illinois inland lakes, and to provide an educational program for citizens. The VLMP program is a statewide program, with over 50 lakes participating in Lake County alone.

In the Basic Monitoring Program, citizens select a lake in which they have an interest in and are then trained to measure water clarity (transparency) using a Secchi disk. This increases citizen knowledge and awareness of the factors that affect lake quality so they can understand the lake ecosystem. It also provides data to homeowner and lake associations to make informed lake management decisions. Other observations recorded by volunteers include water color, suspended algae and sediment, aquatic plants and odor are also recorded. Volunteers monitor twice a month, May through October and this program provides valuable long-term trend data for the lakes of Illinois.

If you would like more information or are interested in joining VLMP for a lake of your interest, please contact:

Lake County VLMP Coordinator
Alana Bartolai
(847) 377-8009
abartolai2@lakecountyil.gov

Figure 1: 2015 Volunteer Lakes by Type



Map courtesy of IEPA

More information available at:
www.epa.state.il.us/water/vlmp/index.html

Upcoming Opportunities

Illinois Lakes Management Association 32nd Annual Conference

The Illinois Lake Management Association (ILMA) is hosting its 32nd annual ILMA Conference at the Crystal Lake Conference Center. The 32nd annual conference will feature a wide variety of lake-centric presentations on such topics as in-lake processes, watershed issues, lake protection and restoration projects, climate variability, planning and policy, using VLMP data, algae, and carp. Two full days of technical sessions will be held on Thursday and Friday, March 30-31. The complete agenda and speaker list will be available on the ILMA website in February. Professional development hours (PDHs) will be available for attendees: 10 PDHs will be provided for attending the 2 days of conference sessions; 4 PDHs will be provided for attending the Saturday workshop.

Keynote address by special guest, author John Scott Watson

John will discuss his experience with the Prairie Crossings community. This residential development was carved out of century-old farmland near Chicago, Illinois, and is a novel experiment in urban public policy that preserves 69 percent of the land as open space. The for-profit project has set out to do nothing less than use access to nature as a means to challenge America's failed culture of suburban sprawl. Register by March 16th for discounted tickets. Visit http://www.ilma-lakes.org/conference for a complete list of speakers and to register.

32nd Annual ILMA Conference
March 30th—April 1st, 2017
Crystal Lake Conference Center
Crystal Lake, IL

Get it in Writing: Steps for Developing Your Lake Management Plan: April 1, 2017

On Saturday, April 1, a half-day workshop as part of the ILMA conference will cover all the steps needed for writing a lake management plan . At this workshop, Lake County Health Department, Chicago Metropolitan Agency for Planning, Crystal Lake Park District, and Hey and Associates, Inc. representatives will explain the types of information needed to make local lake management decisions, offer a format for summarizing information and debating alternatives, and provide a local example of community commitment to a lake. The workshop will cost $25 and you can register on the ILMA website at http://www.ilma-lakes.org/conference.

Lake County
Health Department -
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847- 377- 8020

Mike Adam:
Senior Biologist

Alana Bartolai:
Water Quality Specialist

Gerard Urbanozo:
Water Quality Specialist

Questions regarding the Cattail Chronicles can be directed to Alana Bartolai at 847-377-8009 or abartolai2@lakecountyil.gov.

LakeCounty
Health Department and
Community Health Center

Can you identify this aquatic macrophyte?

Clues:

- Have leaves in whorls of 3 around the stem.
- Submerged aquatic plant
- Grows in a wide range of aquatic habitats and can handle silty and nutrient rich waters
- Provides good habitat for many aquatic invertebrates, fish and amphibians
- A common aquarium plant

Think you know the answer? Email your best guess to abartolai2@lakecountyil.gov.

We're on the web! To find out information about your local lake, beach advisories, and more visit:
https://www.lakecountyil.gov/2381/Lakes-Management-Unit
Also, we're on Facebook! Find us on Facebook "LCHD Ecological Services"